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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,401	05/18/2005	Tameo Kawakami	272485US0PCT	4406
22850	7590	04/02/2008	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			MCDONOUGH, JAMES E	
			ART UNIT	PAPER NUMBER
			1793	
			NOTIFICATION DATE	DELIVERY MODE
			04/02/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/535,401	<b>Applicant(s)</b> KAWAKAMI ET AL.	
	<b>Examiner</b> JAMES E. MCDONOUGH	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

Applicant's cancellation of claim 3 overcomes the 112 rejection over this claim.

### Original Rejection

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamato et al. (JP-10-087390).

Regarding claim 1 Yamato et al. teaches a non-azide gas generating composition comprising a molded tubular article, that is cut to size (see figure one and paragraphs 0035 and 039).

Although, Yamato et al. does not explicitly disclose the squashing of both ends of the formed article, Yamato et al. do disclose the rest of the limitations of the claims. However, because the skilled artisan would appreciate that cutting the extruded tube before it is dry, while it is still semi-solid and pliable, would necessarily squash both ends by applying two forces to the outside of the tube, it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to modify the teachings of Yamato et al., by squashing both ends of the extruded article by cutting the tube into lengths of desired size.

Regarding claim 2 Yamato et al. teaches a gas generating agent that has an outer diameter of 1.5-3, an inner diameter of 0.56-0.8 mm, and a length of 0.5-5 mm (paragraph 0040).

Regarding claim 3 The tank maximum pressure is considered to be an inherent property. See MPEP 2112 [R-3].

The express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. "The inherent teaching of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness." *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995) (affirmed a 35 U.S.C. 103 rejection based in part on inherent disclosure in one of the references). See also *In re Grasselli*, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed. Cir. 1983).

Regarding claim 4 The time from start up until the attainment of maximum pressure and the shape of the pressure-time curve are considered to be inherent properties. See MPEP 2112 [R-3].

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The express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. "The inherent teaching of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness." *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995) (affirmed a 35 U.S.C. 103 rejection based in part on inherent disclosure in one of the references). See also *In re Grasselli*, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed. Cir. 1983).

Regarding claims 5-7 Yamato et al. teaches a gas generating composition comprising 25-60% nitrogen containing organic compound, 40-65% of an oxidizing agent, 1-20% of a slag formation agent, and 3-12 % water soluble binder (claim 27). Yamato et al. further teaches that nitroguanidine is the nitrogen compound, strontium nitrate is the oxidizer, acid clay is the slag formation agent, and the binder is selected from a carboxymethyl cellulose (claim 8) and polysaccharide derivatives (claim 22).

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamato et al. (JP-10/087390) as applied to claim 1-7 above, and further in view of Kodama et al. (US 2005/0162607).

Although, Yamato et al. does not explicitly call for the use of hydroxypropyl methyl cellulose, Yamato et al. does teach the rest of the limitations of the instant claims, and teaches the use of polysaccharide derivatives and carboxymethyl celluloses as the binder, of which, hydroxypropyl methyl cellulose falls into both of these classes of binders. However, because Kodama et al. teaches the use of binders being derivatives of polysaccharides such as carboxymethyl cellulose and hydroxypropyl methylcellulose are conventional in gas generators (paragraph 0029), it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to

modify the teachings of Yamato et al., by using hydroxypropyl methylcellulose as the binder, as suggested by Kodama et al..

### **Response to Arguments**

Applicants argue that because Yamato teaches that the composition exhibits a high combustion performance, it may inflate the air bag too quickly and become incapable of ensuring safety. This is not persuasive because the rate of combustion is controlled by several factors, when looking at identical compositions it is understood that size and shape will control combustion rate, and applicants claims recite combustion speeds of as fast as 20 ms, and applicants have not shown that the reference will not meet these limitation, actually to the contrary the declaration submitted with this response shows that the composition speed is around 30 ms, and further it would be obvious to the skilled artisan to change the shape or size to control the combustion speed.

Applicants argue that with the instant invention the inflator can be reduced in size and weight because the squashed tubes have a higher bulk density and have a higher compression strength. This is not persuasive because the bulk density can be controlled by methods other than squashing the ends and a higher compression strength does not allow things to fit closer together, and further the skilled artisan would appreciate that a cylinder has one of the highest compression strengths of any shape along its central axis. Further still, applicants have not shown that the composition of the reference will change its shape over time where the composition of the instant invention will not.

Applicants argue that examples 1-3 and comparative examples 1-2 show that the slower burn and start times in the examples with squashed ends will moderate the mechanical shock caused by rapid inflation. This is not persuasive because 1.) the tables do not show that great of a difference that one skilled in the art would expect a great shock in one and not the other and 2.) The rate can be controlled by changing the size and shape (i.e. making the wall thicker will also produce this effect, as the surface area to volume decreases, and it is well known in the art that allowing the size to change during combustion will vary the surface area and the combustion rate.

Applicants argue the superiority of their shape because it allows a higher packing density. This is not persuasive because the packing density can be controlled by other factors as stated.

Applicants argue that the unexpected results they obtain could not be predicted from Yamato. This is not persuasive for the reasons stated above as to why the skilled artisan would have found it obvious to change the size and shape.

Applicants have submitted a declaration in an attempt to show unexpected result. The declaration has been fully considered but is not persuasive for the reasons given below:

1.) This is not a sufficient comparison of squashed versus unsquashed ends because test piece A has a larger diameter, the internal diameter before squashing is not given, and while the length is considerably shorter the weight is greater and the skilled artisan

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would not expected this if two strands were produced from the same extruder while one was squashed and the other not.

2.) The higher bulk density seen in this declaration can not be determined to be solely from the squashing for the reason given above.

3.) The increased velocity is not unexpected as the skilled artisan would appreciate that as the shape and size change the combustion rate will change and it is known to have the shape change over time so the rate can change over time.

4.) It can not be determined if the increased stiffness is because of the squashed end or because there is more material present, as the skilled artisan would expected a cylinder to have a higher compression rating than a squashed cylinder (based on geometric considerations).

5.) It can not be determined if the increase in bulk density is due to the ends being squashed or other changes in the shape/size of the piece as stated above.

6.) Density can also be further increased by using smaller internal diameter as there will be less empty space in the piece.

7.) The combustion speed of the unsquashed article is 30 ms, but the claimed range is 20 ms to 100 ms, so this meets the claimed limitations and it is understood that a particle whose surface area changes during combustion will have a combustion rate that changes during combustion, and if the combustion is too fast or too slow the skilled artisan would appreciate that by changing the surface area to volume the rate can be increased or decreased.



### **Conclusion**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES E. MCDONOUGH whose telephone number is (571)272-6398. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerry A Lorengo/  
Supervisory Patent Examiner, Art Unit 1793

JEM 3/24/2008